

DUAL MAGNIFICATION FOLDING TRAVEL MIRROR
WITH ANNULAR ILLUMINATOR
BACKGROUND OF THE INVENTION

A. Field of the Invention

The present invention relates to mirrors of the type used by people to facilitate performance of personal care functions such as shaving, applying cosmetics, and the like. More particularly, the invention relates to a novel travel mirror device which is collapsible into a compact, lightweight, readily transportable assembly, and which includes a pair of mirrors of different relative magnification and an integral annular illuminator which is effective in illuminating objects in front of both mirrors.

B. Description of Background Art

People who travel frequently to distant locations often must deal with the absence of conveniences which are taken for granted in their home environments. For example, women who perform grooming tasks such as applying cosmetics and the like typically perform such tasks at a customary location which is adequately lighted and which is provided with a fixed wall-mounted mirror, or a mirror which rests on a table, vanity or the like. However, lodgings at travel destinations usually do not have the optimal arrangements of lighting and seating located near a suitable mirror, such as one has available at his or her personal residence. Also, many people find it useful to have available mirrors with different magnification factors greater than the unitary or 1X imaging factor of conventional flat mirrors. For example, mirrors having 5X or 9X magnification factors are useful in facilitating the performance of detailed grooming procedures. But most travel lodgings have at best 1X flat mirrors which do not provide magnified images.

In view of the foregoing considerations, it would be desirable to have a mirror device which has multiple magnification factors, and an integral light source for illuminating an object such as a person's face within the object field of the mirror. Moreover, it would be desirable to have a dual magnification mirror with an integral illumination source, which could

1 be folded into a lightweight, compact configuration in which reflecting surfaces of two mirrors
2 were protectively
3 enclosed for transport in a purse, briefcase or the like, yet be readily unfoldable at a use site
4 such as a hotel room to deploy for use a mirror of selected magnification, adequate size, and
5 adjustable orientation. The present inventor is unaware of any existing mirror device which
6 possesses the foregoing characteristics and the unavailability of the desired combination of
7 features was a factor motivating the present invention.

8 OBJECTS OF THE INVENTION

9 An object of the present invention is to provide a portable illuminated, dual
10 magnification mirror device which is sufficiently small and light in weight to be conveniently and
11 safely transportable in a traveler's luggage, carry-on bag, purse or briefcase.

12 Another object of the invention is to provide an illuminated travel mirror which
13 includes a mirror assembly that includes a first or primary mirror having a first magnification and
14 a peripheral annular illumination source which is effective in illuminating an object field in front
15 of the primary mirror.

16 Another object of the invention is to provide an illuminated travel mirror which
17 includes a peripherally illuminated primary mirror having a first image magnification factor, and
18 a secondary mirror having a second image magnification factor which is mounted to an edge
19 of a frame holding the primary mirror by a hinge coupler that enables the secondary mirror to
20 be pivoted from a compact transit and storage configuration overlying and covering the primary
21 mirror to a use configuration deployed radially outwardly from the primary mirror.

22 Another object of the invention is to provide an illuminated travel mirror which
23 includes a primary mirror mounted in a primary frame provided with a peripheral annular
24 illuminator, a secondary mirror mounted in a secondary frame which has a peripheral light-
25 transmissive annular ring-shaped bezel, and a hinge coupler provided with a pivotable joint
26 which connects peripheral edges of the primary and secondary frames and which enables the
27 secondary mirror to be pivoted to a position overlying the main mirror frame, enabling light from
28

1 the illuminator of the primary mirror frame to be transmitted through the light transmissive bezel
2 of the secondary mirror and thereby illuminate an object field in front of the secondary mirror.

3 Another object of the invention is to provide an illuminated travel mirror which
4 includes a base, an elongated handle which has a lower end pivotably mounted to the base by
5 a handle joint, a dual mirror assembly telescopically mounted to an upper end of the handle
6 assembly and which includes a first, primary mirror frame which holds a circular primary mirror
7 that is effective in producing reflected images having a first magnification factor and an annular
8 ring-shaped peripheral illumination source that at least partially circumscribes the primary mirror,
9 a secondary, upper mirror frame which is pivotably connected by a hinge coupler to an upper
10 part of the primary mirror frame at a location opposite to the end joined to the handle and which
11 includes a second, secondary mirror having a different magnification factor than that of the
12 primary mirror and which is circumscribed by a light transmissive peripheral frame portion or
13 bezel, the hinge coupler connecting the secondary frame to the primary frame being so
14 constructed as to enable the secondary mirror frame to be pivoted about a transverse axle of
15 the hinge coupler away from a compact storage and transit configuration overlying the primary
16 mirror frame to a use configuration disposed radially outwardly from the primary mirror frame,
17 whereby the annular illumination source is enabled to illuminate an object field in front of the
18 primary mirror, and whereby the secondary mirror frame is rotatable about a radially disposed
19 swivel axis of the hinge coupler to position the reflective surface of the secondary mirror facing
20 away from the primary mirror, and the secondary mirror frame pivoted towards an orientation
21 overlying the primary mirror and illumination source, whereby light from the illumination source
22 is enabled to be transmitted through the annular light-transmissive bezel ring of the secondary
23 mirror, and thereby illuminate an object field in front of the reflective surface of the secondary
24 mirror.

25 Various other objects and advantages of the present invention, and its most novel
26 features, will become apparent to those skilled in the art by perusing the accompanying
27 specification, drawings and claims.

1 It is to be understood that although the invention disclosed herein is fully capable
2 of achieving the objects and providing the advantages described, the characteristics of the
3 invention described herein are merely illustrative of the preferred embodiments. Accordingly,
4 I do not intend that the scope of my exclusive rights and privileges in the invention be limited to
5 details of the embodiments described. I do intend that equivalents, adaptations and
6 modifications of the invention reasonably inferable from the description contained herein be
7 included within the scope of the invention as defined by the appended claims.

8 SUMMARY OF THE INVENTION

9 Briefly stated, the present invention comprehends a portable travel mirror device
10 which includes a pair of mirrors having different magnification factors, e.g., 1X and 5X, and an
11 annular illumination source which is effective in selectably illuminating object fields of both
12 mirrors.

13 A dual magnification portable travel mirror with annular illuminator according to the
14 present invention includes a base that has a generally flat lower surface for resting on a
15 horizontal support surface, or optionally hanging on a wall. The travel mirror includes a mirror
16 assembly support handle which is mounted to the base by a handle pivot joint that has a
17 horizontally disposed pivot axis which enables the handle to be pivoted upwardly from a
18 compact storage/travel position in which the handle lies in a longitudinally fore and aft disposed
19 groove in the upper surface of the base, parallel to the lower surface of the base, to an
20 upstanding use position. The handle pivot joint includes a laterally disposed friction pad
21 between the outer surface of a laterally disposed cylindrical axle located at a lower end of the
22 handle, and the inner surface of a laterally disposed cylindrical cavity located within a front
23 portion of the base. The handle pivot joint also includes a friction control thumb screw which
24 exerts an adjustable axially directed compressive force on one or more cylindrical friction disk
25 that bears against an end face of the handle axle. Combined radial and axial frictional forces
26 exerted by the friction pad and disks, respectively, maintain the handle fixed at an adjustable
27 elevation angle above the base.

1 The travel mirror according to the present invention includes a dual mirror
2 assembly which is telescopically mounted to an upper part of the mirror assembly support
3 handle. The dual mirror assembly includes a circular dish-shaped primary mirror frame which
4 has a generally flat front surface and a convex rear surface that has a circular perimeter and
5 which is joined to the front surface of the frame by a convex, arcuately radiused annular edge
6 wall. An elongated hollow rectangular handle boss tube protrudes outwardly from the rear
7 surface of the primary frame, the boss being disposed symmetrically along a diameter of the
8 rear frame surface between the flat circular portion of the rear frame surface, and the radiused
9 edge wall, and extending nearly the full diameter of the mirror. The handle boss has a closed,
10 rearwardly angled upper transverse end wall and a lower transverse end wall penetrated by a
11 rectangular cross section channel which extends internally within the boss to the upper
12 transverse end wall.

13 The handle boss channel telescopically receives the upper end of the rectangular
14 cross-section handle. Inside the channel is located a longitudinally elongated detent plate
15 provided with a series of longitudinally spaced apart, laterally disposed detent grooves in a rear
16 surface of the plate, which is located at the front or inner wall of the channel. Also, the front or
17 upper longitudinally elongated rectangular wall of the handle has at upper end thereof a laterally
18 disposed detent rib which is urged resiliently forward towards the grooved surface of the detent
19 plate. The detent rib has an arcuately curved, generally semi-cylindrically shaped transverse
20 cross section, i.e., is radiused, and is of the proper size and shape to snap resiliently into an
21 adjacent detent groove when aligned therewith, and require a relatively large longitudinal force
22 to be exerted on the handle to disengage the rib from the groove. Thus constructed, the primary
23 mirror assembly is telescopically extendable and retractable with respect to the handle, to an
24 adjustable position which is maintained by cooperative action of the detent rib and a detent
25 groove.

26 The primary mirror frame has in a front part thereof a shallow circular dish-shaped
27 cavity in which is mounted a circular mirror of smaller diameter than the outer diameter of the
28 frame. An annular ring-shaped peripheral channel around the mirror cavity holds a ring-shaped

1 illumination source, preferably a thin, tubular cold-cathode fluorescent lamp. Th lamp is
2 energized by a high-voltage electrical current generated by a dc-to-ac inverter located in a
3 hollow interior space within the base of the travel mirror and powered by batteries also located
4 in the base. The front surface of the annular lamp channel is covered by an annular ring-shaped
5 window which preferably has a diffusive light transmission. When the lamp is energized, a
6 circular ring-shaped pattern of light emitted from the lamp and which is transmitted through the
7 window is effective in illuminating an object field in front of the primary mirror. In a preferred
8 embodiment, the primary mirror has a concave spherical shape which provides a magnified
9 image of objects in front of the mirror, such as a person's face. The magnification factor of the
10 primary mirror, which is inversely related to its radius of curvature, may be any desired value,
11 but typically is in the range of 5X to 9X.

12 According to the present invention, the mirror assembly includes a circular
13 secondary mirror which has a different magnification factor than that of the primary mirror, e.g.,
14 1X vs. 5X-9X. The secondary mirror is mounted in a circular frame which is pivotably mounted
15 by a dual-joint hinge coupler at an outer, lower peripheral edge thereof to an outer, upper
16 peripheral edge of the primary mirror frame. Preferably, the secondary mirror frame has an
17 outer diameter approximating that of the primary mirror frame, and is pivotable downwardly to
18 overlie the primary mirror, with the reflective side of the secondary mirror facing that of the
19 primary mirror thereby protecting both primary and secondary mirrors when the travel mirror is
20 telescopically and pivotably configured to a compact configuration for storage or travel. The
21 secondary mirror frame has a circular plate-like shape which includes a generally flat, annular
22 ring-shaped outer peripheral or bezel portion made of a light transmissive material. Also, the
23 secondary mirror preferably has a diameter approximately equal to, or less than, that of the
24 primary mirror.

25 The hinge coupler which joins the secondary mirror to the primary mirror has two
26 bearing axes, including a first, transverse pivot axis disposed along the center line of a
27 transversely disposed axle which is parallel to a tangent to an upper peripheral edge of the
28 primary mirror frame, and which pivotably supports the bushing of a hinge member fastened to

1 a lower peripheral edge of the secondary mirror frame. The hinge coupler includes a second,
2 swivel axis which lies along a center line of a swivel pin that protrudes radially outwardly from
3 the lower edge of the secondary mirror frame and which is rotatable in a radially disposed
4 journal bore centered between opposite sides of the pivot bushing. Thus constructed, the hinge
5 coupler enables the secondary mirror frame to be pivoted away from a protective orientation
6 overlying the primary mirror, to an upwardly angled orientation in which the surface of the
7 secondary mirror faces generally forward, so that a person may view his or her face in either the
8 primary mirror or the secondary mirror. Moreover, the primary mirror frame can be swiveled 180
9 degrees about the radially disposed swivel pin to thus position the reflecting surface of the
10 secondary mirror in a rearward direction, away from that of the primary mirror. With the
11 secondary mirror thus swiveled, the secondary mirror frame is pivotable downwardly to a
12 position overlying and generally parallel to the upper surface of the secondary mirror, thus
13 positioning the reflecting surface of the secondary mirror in the same forward-facing direction
14 as that of the primary mirror. In this disposition, light emitted by the annular illumination source
15 and transmitted through the annular ring-shaped window of the primary mirror frame is
16 transmitted through the annular light transmissive bezel ring of the secondary mirror frame, thus
17 illuminating an object field located in front of the secondary mirror.

18 BRIEF DESCRIPTION OF THE DRAWINGS

19 Figure 1A is a left side perspective view of a dual magnification travel mirror device
20 with annular illuminator according to the present invention, showing the device in fully
21 telescopically and pivotably collapsed configuration suitable for travel.

22 Figure 1B is a left perspective view of the travel mirror device of Figure 1B,
23 showing a secondary mirror frame pivoted upwardly from a dual mirror assembly of the device,
24 and swiveled partially rearwardly.

25 Figure 1C is an oblique perspective view showing the secondary mirror frame
26 swiveled 180 degrees from its disposition in Figure 1A, and pivoted downwardly into a partial
27 overlying use position relative to a primary mirror and base part of the device.

28 Figure 2 is a lower plan view of the travel mirror of Figure 1.

1 Figure 3 is a front perspective view of the travel mirror of Figure 1, showing a dual
2 mirror assembly and handle portion of the device pivoted upwardly from a base part of the
3 device.

4 Figure 4 is a front perspective view similar to that of Figure 3, but showing the
5 handle of the device pivoted fully upwards from the base, and the dual mirror assembly
6 telescopically extended to its maximum height.

7 Figure 5 is a rear perspective view of the arrangement of Figure 4.

8 Figure 6A is an exploded longitudinal sectional view of dual mirror assembly of
9 Figure 3.

10 Figure 6B is an upper plan view of a hinge coupler for the dual mirror assembly
11 of Figure 6A.

12 Figure 6C is a side elevation view of the hinge coupler of Figure 6A.

13 Figure 6D is an upper plan view of the hinge coupler of Figure 6A.

14 Figure 7A is an upper plan view of a primary mirror frame of the dual mirror
15 assembly of Figure 6A.

16 Figure 7B is a longitudinal sectional view of the primary mirror frame of Figure 7A.

17 Figure 7C is a lower plan view of the primary mirror frame of Figure 7A.

18 Figure 7D is a sectional view of the frame of Figure 7C, taken in the direction of
19 line 7D-7D.

20 Figure 7E is an upper plan view of a secondary mirror frame of the dual mirror
21 assembly of Figure 6A.

22 Figure 7F is a longitudinal sectional view of the secondary mirror frame of Figure
23 7C.

24 Figure 8A is a front perspective view of the mirror device of Figure 5, showing the
25 handle pivoted rearwardly to an oblique angle, and showing an upper, secondary mirror of the
26 dual mirror assembly pivoted upwardly away from a lower, primary mirror thereof.

27 Figure 8B is a front elevation view of an annular diffuser plate for the mirror of
28 Figure 1.

1 Figure 9 is a side elevation view of the arrangement of Figure 8A.

2 Figure 10A is a view similar to that of Figure 8A, but showing the upper mirror
3 rotated 180 degrees about a longitudinal, radially disposed swivel axis lying in a vertical medial
4 plane of the handle, and being pivoted downwardly about a transverse pivot axis perpendicular
5 to the rotation axis, to thereby orient the frame side of the upper mirror next to the front surface
6 of the lower mirror, thereby orienting the front, reflective surface of the upper mirror to a forward-
7 facing use position.

8 Figure 10B is a view similar to that of Figure 10A but showing the secondary mirror
9 nearly parallel to the primary mirror, and showing light emitted by an annular illuminator of the
10 primary mirror transmitted through a light transmissive bezel ring of the secondary mirror frame
11 to thereby illuminate an object field in front of the secondary mirror.

12 Figure 11 is a left side perspective view of the mirror device of Figure 1A, showing
13 the dual mirror assembly thereof telescopically retracted on the handle towards the base of the
14 device, and showing the upper mirror of the dual mirror assembly pivoted upwardly and rotated
15 to orient the reflective surface of the upper mirror to a forward use position.

16 Figure 12A is an exploded lower perspective view of the mirror device of Figures
17 1A and 2, showing an upper half shell portion of the base removed from a lower half shell
18 portion and inverted.

19 Figure 12B is an enlarged view of the upper half shell portion of the base shown
20 in Figure 12C.

21 Figure 12C is an enlarged view of the lower half shell portion of the base shown
22 in Figure 12A.

23 Figure 13 is an enlarged view of the mirror frame and handle assembly and the
24 lower shell portion of the base, and showing axial friction control elements transferred from
25 upper half shell grooves to lower half shell grooves, the mirror frame fully extended, and the
26 secondary mirror swiveled into a use position overlying the primary mirror.

27 Figure 14 is a view similar to that of Figure 13, but on a further enlarged scale and
28 showing the handle portion of the device pivoted away from the base.

1 Figure 15 is a front elevation view of a front body shell portion of the handle of the
2 mirror of Figure 1.

3 Figure 16 is a longitudinal sectional view of the handle shell of Figure 15.

4 Figure 17 is a rear elevation view of a rear cover portion of the handle of the mirror
5 of Figure 1.

6 Figure 18 is a rear elevation view of a handle retainer detent plate which mounts
7 in the primary mirror frame of Figure 7.

8 Figure 19 is a transverse sectional view of the detent plate of Figure 17.

9 DESCRIPTION OF THE PREFERRED EMBODIMENTS

10 Figures 1A-19 illustrate various aspects of a dual magnification folding travel mirror
11 with annular illuminator according to the present invention.

12 Referring first to Figures 1A-8A, it may be seen that a dual magnification travel
13 mirror with annular illuminator 20 according to the present invention includes a base 21, an
14 elongated, generally rectangularly-shaped handle 22 pivotably mounted at a lower end thereof
15 to a front edge of the base by a handle pivot joint 23, and a dual mirror assembly 24
16 telescopically mounted to an upper end of the handle.

17 As shown in Figures 6-9, dual mirror assembly 24 includes a first, lower, or primary
18 circular dish-shaped mirror frame 25 in which is mounted a first, lower or primary circular disk-
19 shaped mirror 26. As is also shown in those figures, dual mirror assembly 24 includes a second,
20 upper or secondary circular plate-shaped mirror frame 27 in which is mounted a second, upper
21 or secondary circular disk-shaped secondary mirror 28. As shown in Figures 8 and 9, secondary
22 mirror frame 27 is pivotably and swivelably coupled to primary mirror frame 25 by a dual joint
23 hinge coupler 29. As shown in Figures 7-9, hinge coupler 29 is joined to primary mirror 25 by
24 a pair of circumferentially spaced apart, parallel lugs 30L, 30R which protrude chordally
25 outwards from an upper peripheral portion 31 of primary frame 25.

26 As shown in Figures 6B-6D, hinge coupler 29 includes a laterally symmetrically-
27 shaped body 32 which has a generally cylindrically-shaped lower bushing member 33 that fits
28 between inner facing surfaces 34L, 34R of lugs 30L, 30R. Bushing 33 has disposed laterally

1 through its length a bore 35 which is coaxially aligned with and rotatable with respect to a
2 transversely disposed pivot axle 36 which is disposed through the bore and which is fixed at
3 opposite longitudinal ends thereof in bores 37L, 37R through lugs 30L, 30R.

4 Body member 32 of hinge coupler 32 includes a generally rectangularly-shaped,
5 laterally elongated boss 38 which protrudes radially outwardly from lower bushing portion 33.
6 Boss 38 has an upper surface 39 which lies in a plane above transverse pivot axle 36 and has
7 protruding perpendicularly downwards into upper surface 39 a swivel pin bore 40 which is
8 disposed perpendicularly to and radially outwardly from the transverse pivot axle, midway
9 between opposite transverse sides 41L, 41R of bushing member 33 located at opposite
10 longitudinal ends thereof. Swivel bore 40 rotatably holds a swivel pin 42 which protrudes radially
11 outwardly from a lower edge 43 of upper, secondary mirror frame 27. With this arrangement,
12 secondary mirror frame 27 is pivotable above transversely disposed pivot axle 36, and
13 swivelable in orthogonally disposed, radial swivel pin bore 40, as shown in Figures 8 and 10.

14 As shown in Figures 6A, 7A, 7B, and 11, primary mirror frame 25 includes in an
15 outer peripheral portion which borders primary mirror 26 a rearwardly or inwardly concave
16 annular ring-shaped lamp channel 44 in which is mounted a circular ring-shaped, tubular lamp
17 45, which is preferably a cold-cathode, fluorescent lamp. As shown in Figure 6A, 8A, and 8B,
18 lamp channel 44 has a generally flat, annular, ring-shaped cover window 46 which has light
19 transmissive and preferably partially light-diffusive. In a preferred embodiment, primary mirror
20 26 has a concave, spherically-shaped reflective surface 47 which has a radius of curvature
21 selected to yield a desired magnification factor, e.g., between about 5X and about 9X. Although
22 the dimensions of lamp channel 44 are not critical, the radial width of the channel in an example
23 embodiment of travel mirror 20 was about 3/4 inch.

24 As shown in Figures 6A, 7A and 7B, primary mirror 26 is mounted within a
25 rearwardly concave, generally spherically contoured cavity 48 formed in the front surface of
26 primary mirror frame 25, concentrically located with respect to lamp channel 44, by any suitable
27 means, such as thin strips of tape 49 coated on both sides with a pressure sensitive adhesive
28 and located between an outer annular portion 50 of rear surface 51 of the mirror, and an annular

1 shoulder ledge 52 which protrudes radially inwardly of the outer circumferential wall of the cavity.
2 As shown in Figures 6A and 7B, shoulder ledge 52 is recessed inwardly or rearwardly of outer
3 circumferential edge 53 of primary mirror frame 25, sufficiently far to locate the front surface 54
4 of primary mirror 26 inwardly or rearwardly of annular lamp channel cover window 46, thereby
5 preventing contact between the front surface of the primary mirror with the front surface 55 of
6 secondary mirror 28, when secondary mirror frame 27 is pivoted to overlies the primary mirror,
7 as shown in Figure 1.

8 Referring to Figure 6A, it may be seen that secondary mirror 28 has a circular
9 shape, and may have a spherical concave surface which has a different radius of curvature than
10 that of primary mirror 26, but preferably has less curvature and thereby a smaller magnification
11 factor. In a preferred embodiment, mirror 28 has an infinitely large radius of curvature, i.e., is
12 flat, and thus has a "1X" or unity magnification factor.

13 As shown in Figures 6A, 7E, 7F, and 11, secondary mirror frame 27 has a shape
14 approximating that of a thin circular plate which has a flat front surface 56 and a convex,
15 arcuately curved rear surface 57 which has a slight curvature. Front surface 56 of secondary
16 mirror frame 27 has formed therein a concentric, circular shallow recess 58 which has a circular
17 bottom wall 59 and a cylindrically shaped peripheral wall 60. Recess 58 has an outer
18 circumference 61 sufficiently smaller than that of the outer circumferential edge 62 of secondary
19 mirror frame 27 to form therebetween an annular ring-shaped bezel 63 which has a radial width
20 approximately equal to or slightly less than that of annular ring-shaped cover window 46 of
21 primary mirror frame 25, e.g., about 5/8 inch. According to the invention, at least bezel portion
22 63 of secondary mirror frame 27 is made of a light transmissive material. In a preferred
23 embodiment, frame 27 is fabricated as a unitary molded part from a transparent material such
24 as a polycarbonate or acrylic polymer plastic.

25 Secondary mirror 28 is retained within recess 58 of frame 27 by any suitable
26 means, such as pressure sensitive adhesive 64 between rear surface 65 of the secondary mirror
27 and upper surface 66 of bottom wall 59 of the recess.

1 Referring to Figures 3, 6A, 7C, and 7E, it may be seen that secondary mirror
2 frame 27 has a sector-shaped notch formed in outer circumferential edge 62 thereof, thereby
3 forming a straight edge wall 67 lying along a chord of the outer circumferential edge, the edge
4 wall being bisected by a radius of the frame. Chordal edge wall 67 of secondary frame 27 has
5 a flat outer peripheral surface 68 which is perpendicular to flat front surface 56 of the frame, and
6 has protruding radially inwardly therefrom a tapered bore 69 in which is fixed swivel pin 42. As
7 explained above, the outwardly protruding, lower portion 42 of swivel pin 42 is rotatably held
8 within swivel bore 42 of hinge coupler 29.

9 Figures 2, 4, 5, and 9-14 illustrate details of base 21, handle 22, and handle pivot
10 joint 23 of travel mirror 20 according to the present invention. As shown in those figures, base
11 21 preferably includes an upper upwardly concave base half shell 70, and a lower downwardly
12 concave base half shell 71, each of which has in plan view a longitudinally elongated oblong
13 shape with arcuately curved transverse end walls. Thus, upper half shell 70 has an upper wall
14 72 which has protruding downwardly therefrom a flange wall 73 which includes straight left and
15 right parallel longitudinally disposed side wall segments 74, 75 and front and rear convex
16 arcuately curved transverse end wall segments 76, 77, respectively, which are each
17 symmetrically shaped about a longitudinal vertical center plane of the base, and symmetrically
18 shaped with respect to one another through a transversely disposed central mirror plane of the
19 base. Similarly, lower base half shell 71 has a lower base wall 82 which has protruding upwardly
20 therefrom a flange wall 83 which includes straight left and right parallel longitudinally disposed
21 side wall segments 84, 85 and front and rear convex arcuately curved transverse end wall
22 segments 86, 87, respectively, which are each symmetrically shaped about a longitudinal vertical
23 center plane of the base, and symmetrically shaped with respect to one another through a
24 transversely disposed central plane of the base. As shown in Figures 5 and 6A, upper half shell
25 70 has formed in upper surface 72U of upper wall 72 thereof a relatively wide, longitudinally
26 elongated rectangularly-shaped handle groove 87 located centrally between left and right side
27 walls 74, 75 of the upper half shell.

1 Referring now to Figures 9-14, it may be seen that upper and lower half shells 70,
2 71 have inner concave spaces 90, 91, respectively, which, when the half shells are fastened
3 together, form an elongated hollow interior space 92. Concave inner space 90 of upper half shell
4 70 contains a battery compartment 93 which is adapted to hold four AA dry cells connected in
5 series with a pair of positive and negative output lead wires 94, 95 which are connected in
6 parallel with a battery eliminator jack 96 mounted in a vertically opposed pair of upper and lower
7 slots 97, 98 of upper and lower half shells 70, 71, the jack protruding rearward through upper and
8 lower U-shaped half apertures 99, 100 in rear transverse end walls 77, 87, respectively, of the
9 upper and lower half shells. Positive and negative output lead wires 94, 95 are also connected
10 through a switch 101 to power input terminals of a d.c.-a.c. inverter 102, which has a pair of high-
11 voltage a.c. output lead wires 103, 104 which thread through the bore 105 of a diametrically split
12 axle bushing 106 located at a transverse end of a handle pivot axle 107 located at the lower end
13 of handle 22, and thence to electrodes 108, 109 of lamp 45.

14 As shown in Figures 2 and 11, bottom half shell 71 of base 21 has a longitudinally
15 disposed battery compartment access door 110 frictionally held within a longitudinally elongated,
16 rectangularly shaped battery compartment access port 111 by a resilient plastic folded leaf-
17 shaped self-spring latch 112 molded integrally with the access door, which is vertically aligned
18 with battery compartment 93. Preferably, base wall 82 of lower half shell 71 also has through its
19 thickness dimension a pair of longitudinally spaced apart, front and rear laterally disposed
20 mounting holes 113F, 113B which each have generally circularly shaped center portion 114 and
21 a pair of diametrically opposed radially outwardly protruding, mirror-symmetric slots 115 for
22 slidably receiving the shank of mounting screw (not shown) screwed into a wall which has a head
23 (not shown) insertable into the center portion of the mounting holes, thereby enabling travel
24 mirror 20 to be removably mounted onto a wall by a pair of vertically disposed screws.

25 Referring to Figures 9-16, it may be seen that handle pivot axle 107 located at a
26 lower end portion of handle 22 has a generally cylindrical shaped major body portion 116 which
27 is disposed transversely between opposite left and right vertical sides 117L, 117R of the handle.
28 Pivot axle 107 includes at one side of, e.g., the left side, a bushing 106 of smaller diameter than

1 body 116 of the axle which protrudes axially, i.e., perpendicularly outwards from left transverse
2 face end 119 of the axle body. Also, pivot axle 107 has protruding from an opposite, e.g., right
3 transverse side thereof, a cylindrically shaped boss section 120 which has a diameter
4 approximating that of main axle body 116. Cylindrical boss section 120 of axle 107 has formed
5 in outer cylindrical wall surface 121 thereof a rectangular cross-section, circumferential annular
6 groove 122, an inner transverse end wall 123 of which is located adjacent to right vertical side
7 wall 117R of the handle. Boss section 120 also has a cylindrically shaped axially outwardly
8 located end portion 124 which extends from an outer transverse end wall 125 of groove 122.
9 Outer cylindrical end portion 124 of right-hand cylindrical boss section 120 of handle pivot axle
10 107 has a transversely disposed, outer circular end face 125, which has protruding
11 perpendicularly outwards therefrom a concentrically located stud 126 which has a generally
12 rectangular transverse cross section.

13 Referring still to Figures 9-16, it may be seen that upper and lower base half shells
14 70, 71 have formed in front portions of inner opposed concave faces 127, 128 thereof
15 transversely disposed, generally semi-cylindrically shaped upper and lower grooves or channels
16 129, 130, respectively, which, when the half shells are secured together, form a generally
17 cylindrically-shaped cavity 131 for rotatably receiving cylindrically-shaped handle pivot axle 107.
18 Thus, as shown in Figures 9-11, lower base half shell 71 has protruding upwardly from lower
19 base wall 82 thereof a laterally centrally located, generally semi-cylindrically-shaped pivot axle
20 groove 132 which has a front upper wall 133 adjacent to front transverse end wall 86 of the base
21 shell. Pivot axle groove 132 has a rear edge wall comprised of a thin, arcuately curved web 134
22 which protrudes upwardly from the upper surface 135 of lower base wall 82, and a lower wall
23 surface 135 comprised of a semi-cylindrically contoured groove formed in the upper surface of
24 the lower base half shell. As shown in Figure 11, lower curved wall surface 135 of semi-
25 cylindrical pivot axle groove 132 preferably has protruding downwardly therefrom a laterally
26 elongated, rectangularly-shaped shallow recess 136 in which is mounted a rectangularly-shaped
27 friction pad 137 that is made of a material such as silicone rubber which has a relatively large
28 surface coefficient of sliding friction.

1 As shown in Figures 2B and 11, pivot axle groove 132 has left and right U-shaped,
2 transverse end journals 138, 139 located at left and right ends thereof, respectively, of the
3 groove. The end journals 138, 139 are comprised of generally uniform-thickness, transversely
4 disposed U-shaped webs 140, 141 which protrude perpendicularly upwards from upper surface
5 135 of lower base wall 82 of lower half shell 71. Left and right end journals 138, 139 have
6 formed in upper surfaces thereof left and right downwardly concave semi-cylindrically-shaped
7 grooves 142, 143 which are of a suitable size and lateral spacing from one another to rotatably
8 receive the left-hand bushing 106 and right-hand groove 122 of right-hand cylindrical boss section
9 120, respectively, of handle pivot axle body 116.

10 As is also shown in Figures 2B and 11, lower base half shell 71 also includes a
11 generally semi-cylindrically shaped, axial friction control groove 144 which is adjacent to the
12 outer, right-hand transverse face 145 of right-hand handle pivot axle body journal 139. Friction
13 control groove 144 is coaxially aligned with lower semi-cylindrical pivot axle groove 132, and
14 preferably of smaller diameter and length. Also, friction control groove 144 has located at a right
15 transverse end thereof a short semi-cylindrically shaped nut holder groove 146 which has a
16 polygonal transverse cross-section and which is adapted to irrotatably hold a hex nut 147. Nut
17 holder groove 146 has an outer, right-hand transverse end journal 148 which has the form of a
18 U-shaped web 149 that has in an upper surface thereof a groove 150 adapted to rotatably
19 receive the shank 151 of a friction adjustment screw 152 which has located at the outer end
20 thereof, a fluted friction-adjustment knob 153. Also, the inner, left-hand transverse end of nut
21 holder groove 146 is bordered by a U-shaped left-hand end journal 154 comprised of U-shaped
22 web 155 which protrudes upwardly from upper surface 135 of lower base wall 82 of lower half
23 shell 71. Left-hand nut groove journal 154 has formed in upper surface 156 of web 155 thereof
24 a downwardly concave semi-cylindrically shaped groove 157 which is of a suitable size to provide
25 clearance for and therefore allow free rotation of screw shank 151.

26 Referring still to Figure 11, it may be seen that outer, left-hand transverse face 158
27 of left-hand nut groove journal 154 has protruding axially outwards therefrom a pair of generally
28 rectangularly-shaped, vertically disposed front and rear end spacer ribs 159F, 159B, which are

1 spaced equal distances radially outwards from front and rear sides of journal groove 157. Outer,
2 left-hand face 158 of left-hand nut groove journal 158 also has protruding axially outwards from
3 a lower base portion thereof a low, rectangular cross-section, slider rib 160 which protrudes
4 upwardly from the center of lower semi-cylindrical wall surface 161 of friction control groove 144.
5 As shown in Figures 9 and 10, slider rib 160 protrudes upwardly into a longitudinally disposed
6 lower groove 162L formed in the outer cylindrical surface 163 of a cylindrically-shaped slider
7 bushing 165 which is longitudinally slidably located in axial friction control groove 144.

8 As shown in Figures 11-12, slider bushing 165 has formed in outer cylindrical
9 surface 163 thereof upper and lower longitudinally disposed, diametrically opposed, rectangular
10 cross-section grooves 162U, 162L, respectively. Slider bushing 165 has a transversely disposed
11 circular, flat outer or right-hand end face 166, and a circular left-hand transverse face in which
12 are formed axially inwardly protruding rectangular cross-section vertically disposed transverse
13 grooves 167U, 167L which are continuous with upper and lower longitudinal grooves 162U, 162L,
14 and a pair of radially disposed front and rear transverse grooves 168F, 168B which are
15 perpendicular to the vertically disposed grooves. All of the above-identified end face grooves
16 radiate from a coaxially centrally located blind bore 169 which protrudes inwardly from outer, left-
17 hand transverse face 170 of slider bushing 165. Bore 169 is provided for receiving stud 126
18 which protrudes outwardly from boss 120 of handle pivot axle 107. The function of end face
19 grooves 167U, 167L, 168F, 168B is to facilitate elastic deformation of bushing 165 in response
20 to longitudinal forces exerted on the bushing.

21 As shown in Figures 11 and 12, friction control groove 144 longitudinally slidably
22 holds in axial alignment with slider bushing 165 a circular rubber washer 171, which is preferably
23 sandwiched between a pair of outer and inner circular plastic washers 172O, 172I, all of which
24 have a diameter approximating that of the slider bushing and slightly less than that of the friction
25 control groove. Each of the washers is provided with central coaxial through-bore. The inner
26 transverse face 173I of inner plastic washer 172I adjacent to outer circular end face 126 of right-
27 hand cylindrical boss section 120 of handle pivot axle 107 is pressed against the right-hand end
28 face of the handle axle boss section with an axial force which is adjustable by turning friction

1 control knob 153. Turning friction control knob 153 in a direction which advances friction
2 adjustment screw shank 151 towards the handle pivot axle increases the axial frictional force
3 exerted on the pivot axle to resist pivotable motion of the handle relative to the base; turning the
4 control knob in the opposite direction retracts the screw shank to thereby reduce frictional
5 resistance to pivotable motion of the handle.

6 Referring to Figure 11, it may be seen that upper base half shell 70 has formed
7 therein an upwardly concave generally semi-cylindrically shaped, transversely disposed upper
8 half shell channel 129 that has several structural elements which have shapes complementary
9 to those of elements of the lower half shell which were identified and described above. Those
10 upper and lower structural elements are mirror symmetrical through a horizontally disposed joint
11 plane between upper and lower base half shells 70, 71 and cooperate to form generally
12 cylindrically shaped cavities. Thus, for example, upper base half shell 70 has left and right
13 transverse end journals 188, 189, which mate with lower base half shell journals 138, 139, the
14 semi-cylindrically shaped grooves 142, 143 of the lower journals mating with semi-cylindrically
15 shaped grooves 192, 193 of the upper half shell journals to form closed, cylindrically shaped pivot
16 axle body end journals 292, 293, respectively. Similarly, upper base half shell 70 has formed
17 therein an upper semi-cylindrically shaped friction control groove 194 which forms with lower
18 semi-cylindrically shaped friction control groove 144 of lower base half shell 71 a cylindrically
19 shaped friction control cavity 293. Upper base half shell 70 also includes a semi-cylindrically
20 shaped upper nut holder groove 196 which is bordered on right and left ends thereof by right and
21 left upper nut groove journals 198, 204, forming with corresponding lower right and left journals
22 148, 154, respectively, a closed, cylindrically shaped nut holder cavity 296.

23 Referring still to Figure 11, it may be seen that upper base half shell 70 has
24 protruding downwardly from the upper inner surface thereof spacer ribs 209F, 209B and a slider
25 rib 210 which are mirror images of ribs 159F, 159B, and 160, respectively, of lower base half
26 shell 71.

27 As shown in Figures 11-12, upper base half shell 70 has protruding rearwardly from
28 front edge wall 221 thereof an elongated, rectangularly-shaped notch 222 which is laterally

1 symmetrically located with respect to the left and right side walls 223L, 223R of the upper half
2 shell. With upper and lower base half shells 70, 71 fastened together, notch 222 is vertically
3 aligned with semi-cylindrically shaped pivot axle groove 132, and enables handle pivot axle 107
4 to rotate from an angular orientation in which handle 22 is received in handle groove 87 in the
5 upper surface of the upper half shell, in a compact storage/transit configuration, to an upright use
6 configuration in which the handle is angled upwardly from base 21, as shown in Figures 11 and
7 14.

8 Figures 15 through 19 illustrate structural elements of mirror device 20 which
9 enable telescopic adjustment of dual mirror assembly 24 of mirror device 20 to a desired height
10 relative to base 21. As shown in those figures, handle 22 of mirror 20 has a vertically elongated,
11 generally rectangular plan-view front portion 224 which has a shape approximating that of
12 rectangular cross-section channel member or shell which includes a front vertically elongated
13 rectangular front base plate member 225, and rearwardly protruding left and right flange walls
14 226L, 226R. Front handle portion 224 has a rearwardly curved, transversely disposed lower end
15 portion 227 which is coextensive with front, upper half 228 of handle pivot axle 107. Also, handle
16 22 has a rear rectangular plate-shaped panel 229 which is secured within a longitudinally
17 disposed channel 230 in the rear side of front handle shell 224, and has located at a lower end
18 thereof a transversely disposed, generally semi-cylindrically shaped extension 231 which mates
19 with semi-cylindrically shaped lower end 227 of front handle shell 224 to form cylindrically-shaped
20 handle pivot axle 107. Handle 22 fits telescopically slidably within an elongated rectangular bore
21 232 within an elongated generally rectangularly-shaped handle boss tube 233 which protrudes
22 rearwardly from rear surface 234 of primary mirror frame 25, the handle boss extending vertically
23 along a diameter of the mirror frame, centered on a diameter thereof.

24 As shown in Figures 7B, 15-19, bore 232 of handle boss tube 231 has mounted in
25 a front or bottom longitudinally disposed base wall thereof a generally rectangularly-shaped,
26 longitudinally elongated detent plate 235. Detent plate 235 has located in rear surface 236
27 thereof a plurality of a longitudinally spaced apart, laterally disposed detent grooves 237. As is
28 also shown in Figures 15 and 16, front base plate member 225 of front handle shell 224 has an

1 upper transversely disposed edge wall 238 which has protruding perpendicularly inwardly
2 therefrom a pair of parallel, longitudinally disposed left and right slots 239L, 239R which are
3 spaced equal distances to the left and right, respectively, of a longitudinally center plane of the
4 handle shell. Slots 239L, 239R form therebetween a rectangularly-shaped tab 240, which is
5 flexibly and resiliently joined at a rear transverse edge 241 thereof to a longitudinally inwardly
6 located portion of the front base wall plate 225 by an elastically deformable self hinge 242,
7 resulting from front wall plate 225 being made of an elastically deformable polymer such as
8 polypropylene. Tab 240 has protruding downwardly or forwardly from a front edge wall 243
9 thereof a laterally disposed, radiused detent rib 244. Detent rib 244 is of the proper size and
10 shape to snap resiliently into a particular one of detent grooves 237 that it becomes aligned with
11 as primary mirror frame 25 is moved longitudinally with respect to handle 22. With rib 244
12 resiliently engaged within a detent groove 237, a relatively large longitudinal force must be
13 exerted on handle 22 relative to primary mirror frame 25 to disengage the rib from the groove.
14 Thus constructed, primary mirror frame 25 is telescopically extendible and retractable with
15 respect to handle 22, to an adjustable length or height relative to base 22, the adjusted height
16 being maintained by cooperative action of the detent rib and a detent groove.